A Sample Information Retrieval Index

Document A : Now is the time.
Document B : For all good men.
Document C: To come to the aid of their country.

	Document A	Document B	Document C
Now	1		
Is	1		
The	1		1
Time	1		
For		1	
All		1	
Good		1	
Men		1	
To			2
Come			1
Aid			1
of			1
their			1
country			1

Figure 1

```
CLAUSE
      NP (SUBJ)
              The [article]
              Department of Justice [noun (phrasal, gov_entity)]
      VP (ACTIVE_VOICE)
              sued [verb, past tense]
      NP (DOBJ,)
              Microsoft [noun, (company)]
      PP
              for [preposition]
              NP
                      antitrust [adjective]
                      violations [noun]
      PP
              in
              NP
                      federal [adjective]
                      court [noun]
```

Figure 2a
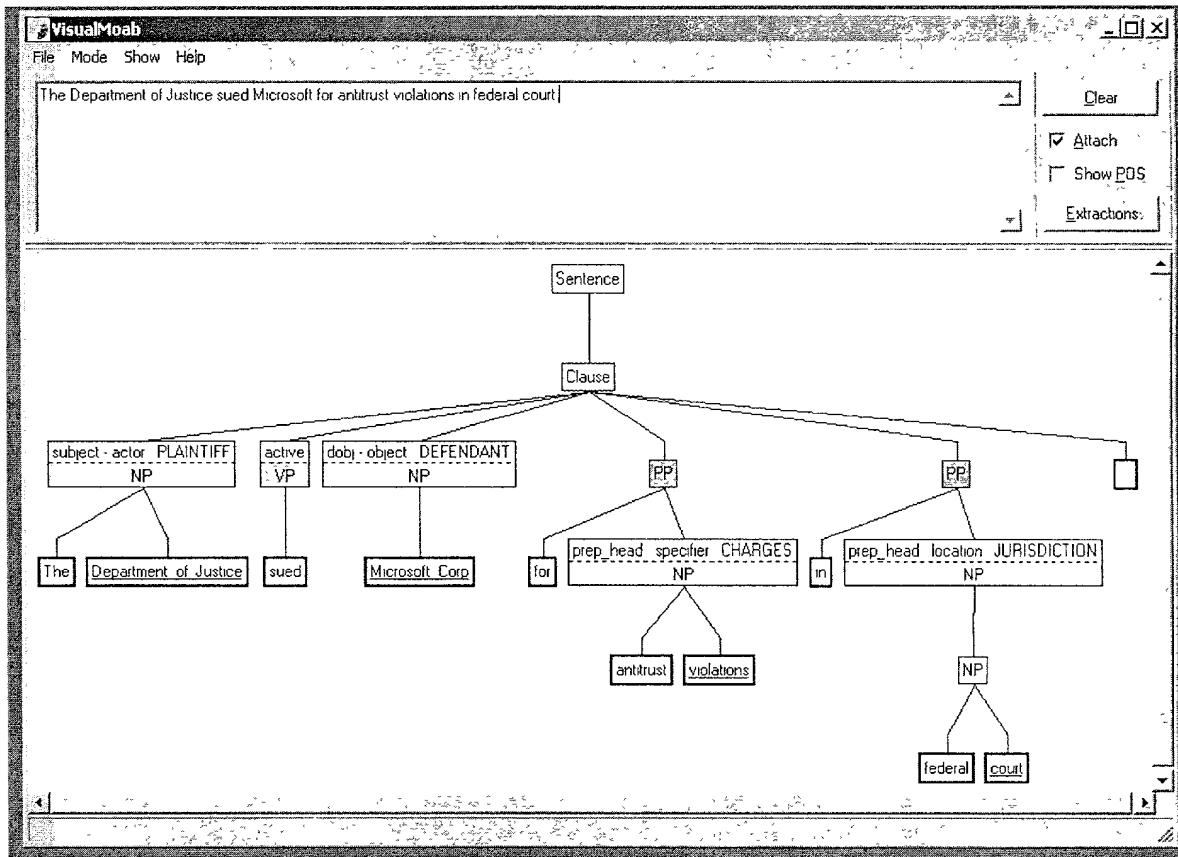
Figure 2b
**A Graphical View of A Sentence Parse and Thematic Role Assignment**

```
                        ┌──────────────┐
                        │  Corpus of   │
                        │  Documents   │
                        └──────────────┘
                               │
          ┌────────────────────┼──────────────────────────┐
          │                    │                           │
          │         ╱──────────────────╲          ┌──────────────┐
          │        ╱  Optional          ╲────────▶│   Step 1     │
          │       ╱   Semantic           ╲        │   Parsing    │
          │      ╱    Hierachy            ╱        │              │
          │      ╲──────────┬────────────╱        └──────┬───────┘
          │                 │                            │
          │                 │                     ┌──────▼───────┐
          │                 │                     │   Step 2     │
   ┌──────▼────────┐        │                     │   Caseframe  │
   │   Step 5      │        │                     │   Application│
   │ File Information│      │                     └──────┬───────┘
   │ and Sentence  │        │                            │
   │ Information   │        │                     ┌──────▼───────┐
   │ Gathering     │        │                     │   Step 3     │
   └──────┬────────┘        │                     │ Thematic Role│
          │                 │                     │  Assignment  │
          │                 │                     └──────┬───────┘
          │                 │                            │
          │                 │                     ┌──────▼───────┐
          │                 │                     │   Step 4     │
          │                 │                     │  Unification │
          │                 │                     └──────┬───────┘
          │                 │                            │
          │          ┌──────▼───────┐                    │
          └─────────▶│   Step 6     │◀───────────────────┘
                     │ Index Creation│
                     └──────┬───────┘
                            │
                    ╱───────▼────────╲
                   ╱  Relational      ╲
                  ╱    Text            ╲
                 ╱     Index            ╲
                 ╲─────────────────────╱
```
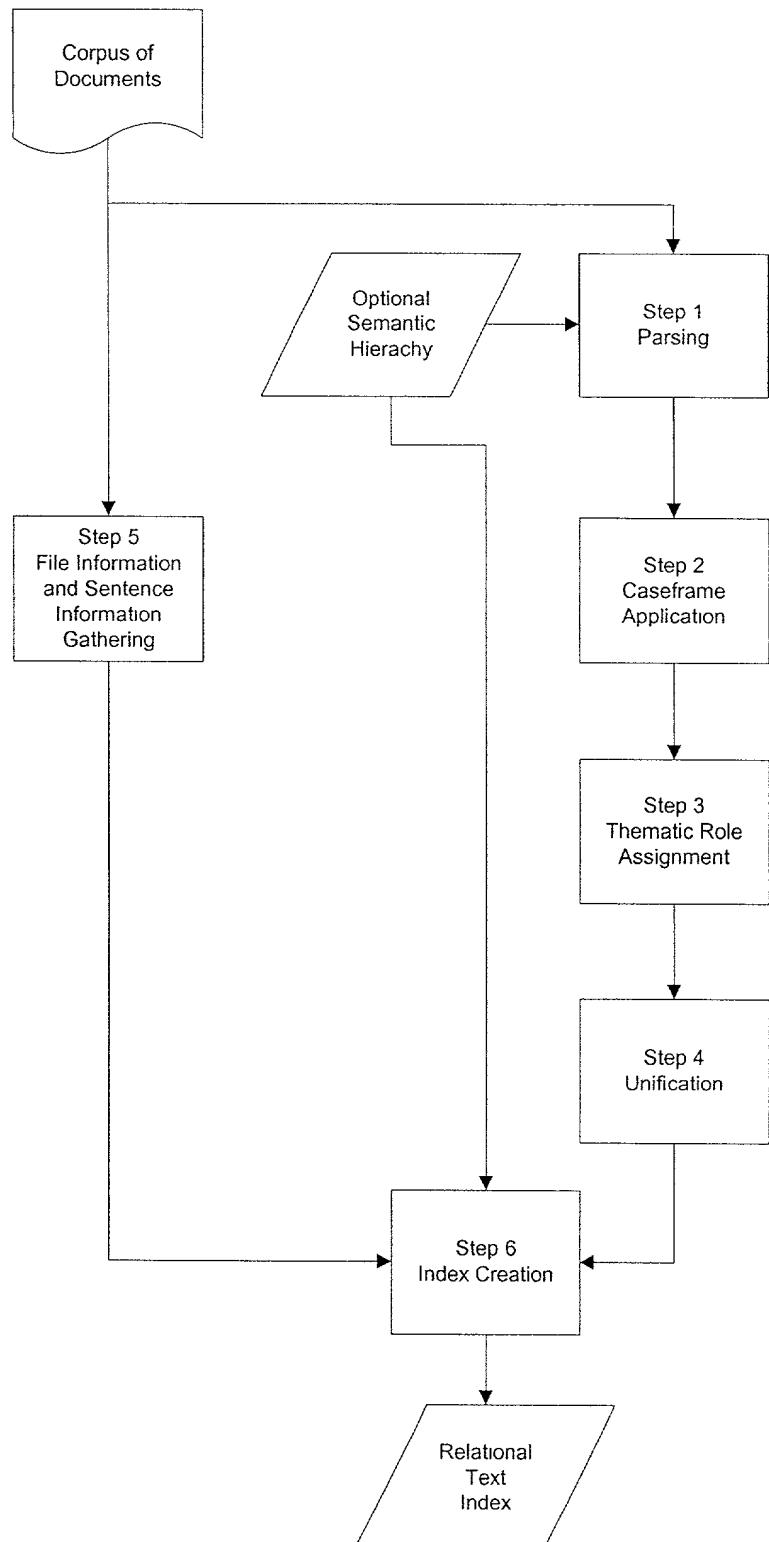
Figure 3
Index Creation Algorithm, High Level
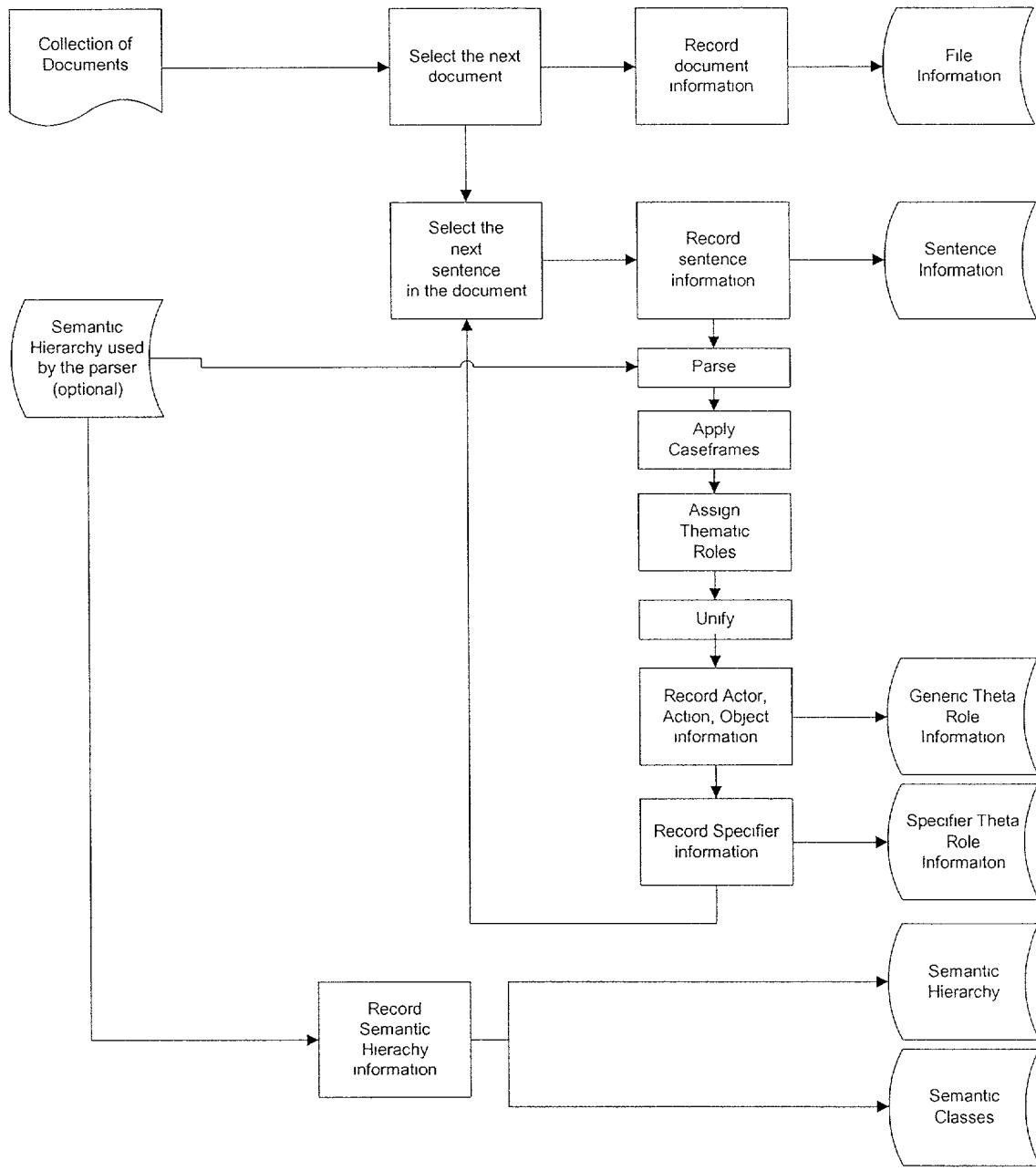
Figure 4
Index Creation Algorithm, Low Level

```
HTML documents
on website
```

```
Word files
in disk directory
```

```
BOWTIE
```

```
Text fields in
ODBC database
```

```
MOAB

Parsing

Caseframe
Assignment

Thematic Role
Assignment

Unification
```

```
Index
Creation
```

```
Relational
Text Index
```
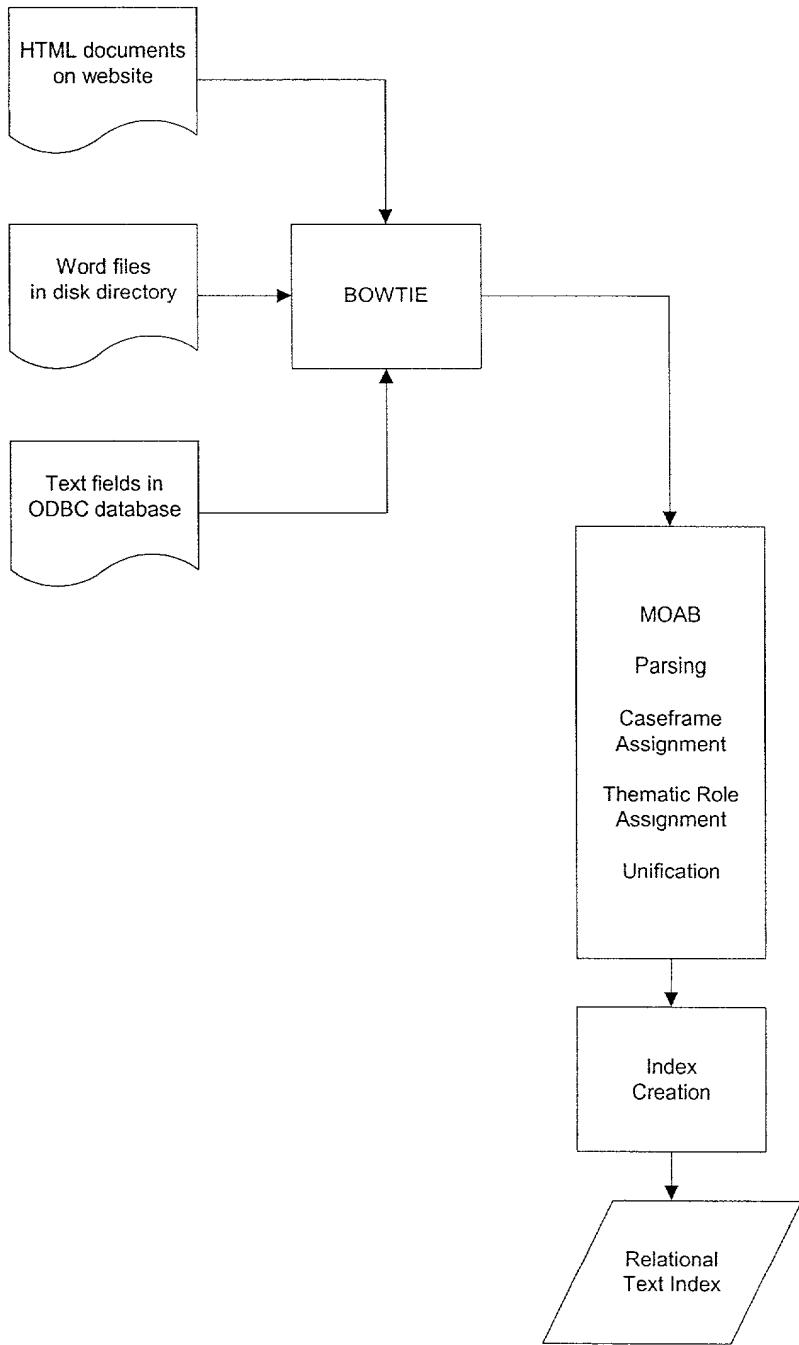
Figure 5
Overall Flow
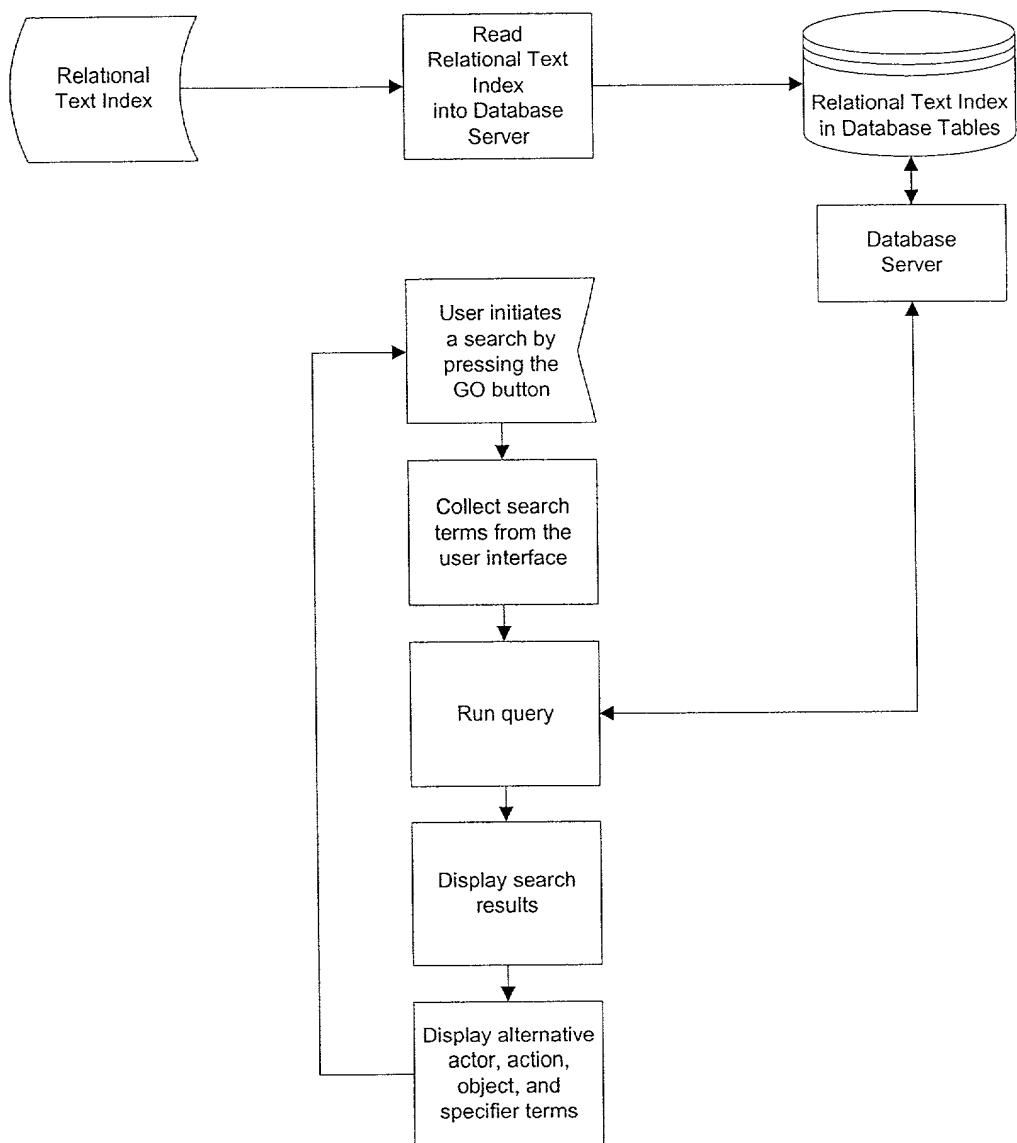
Figure 6
Flowchart – PowerDrill

POWERDRILL

Get User Query

Execute Query ⟷ End-of-Sentence
Recognition
Mechanism

Display Results

Display
Associated Theta
Role Values

Database
Server

Relational
Text Index
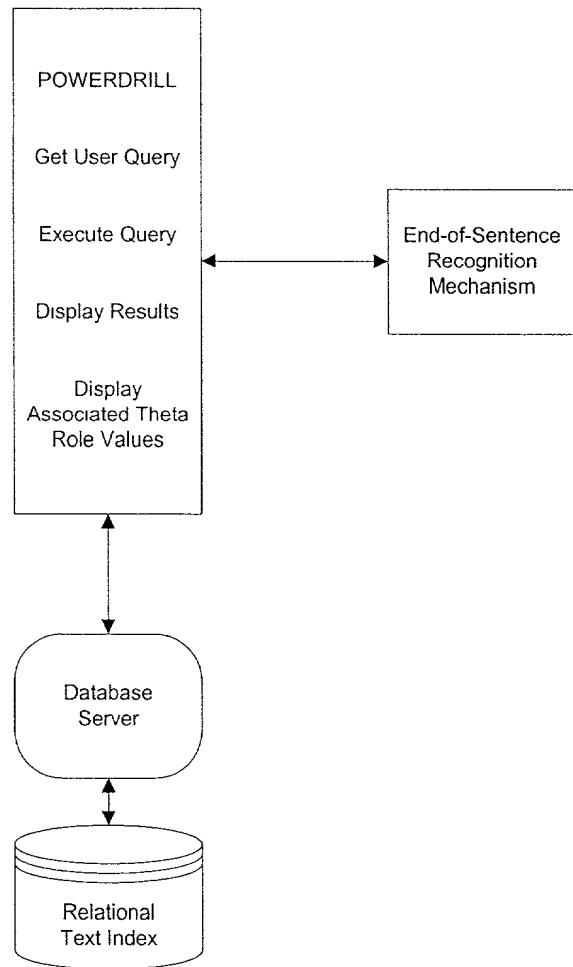
Figure 7
Overall Search Processing
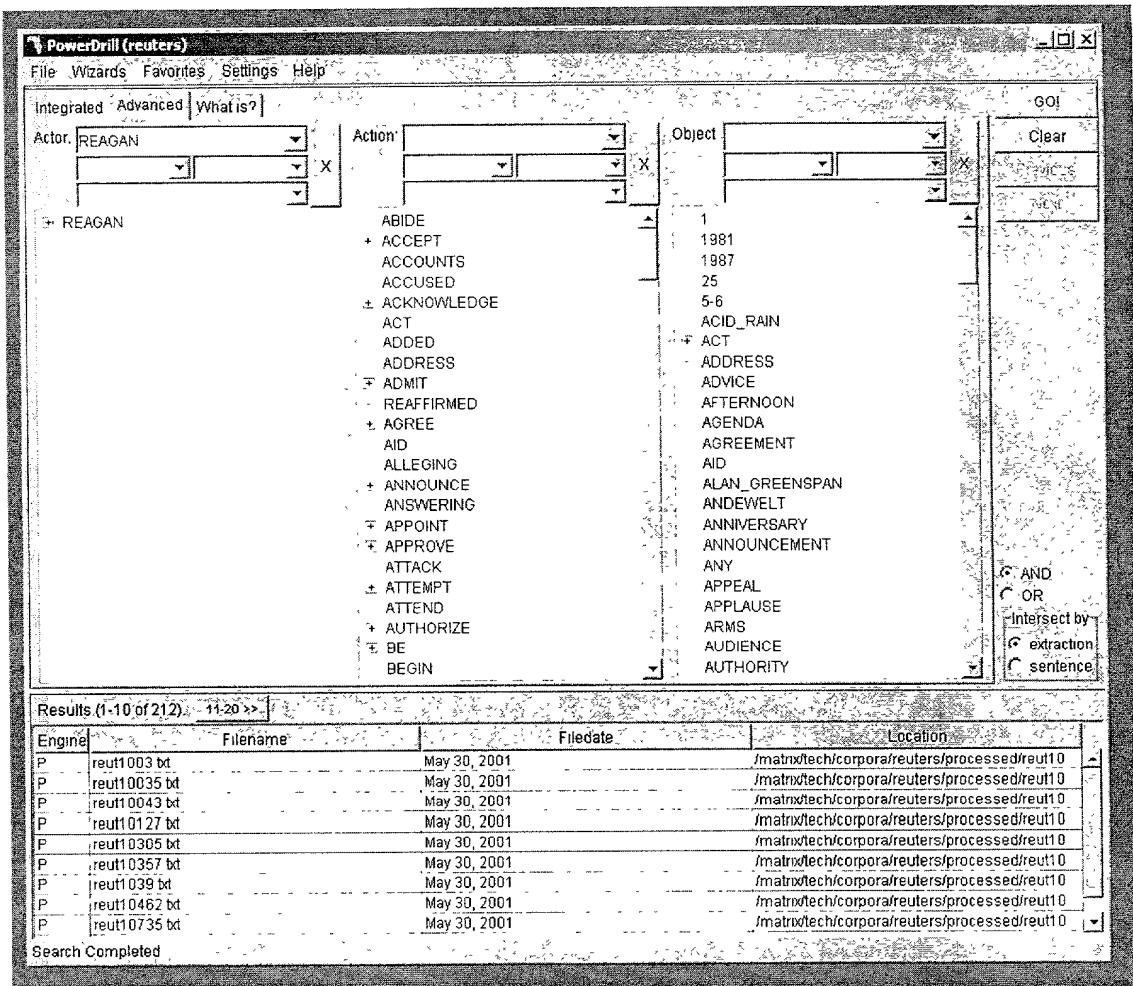
FIGURE 8
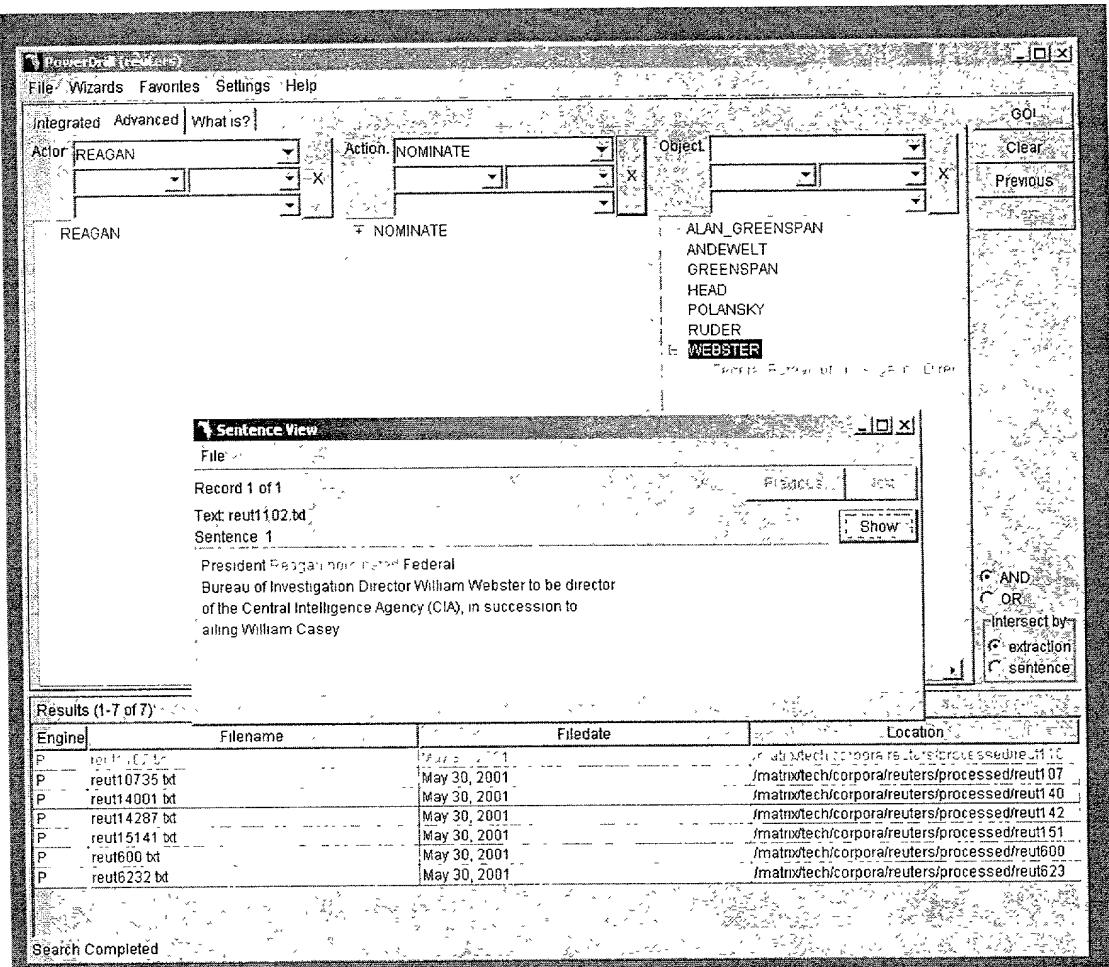
FIGURE 9
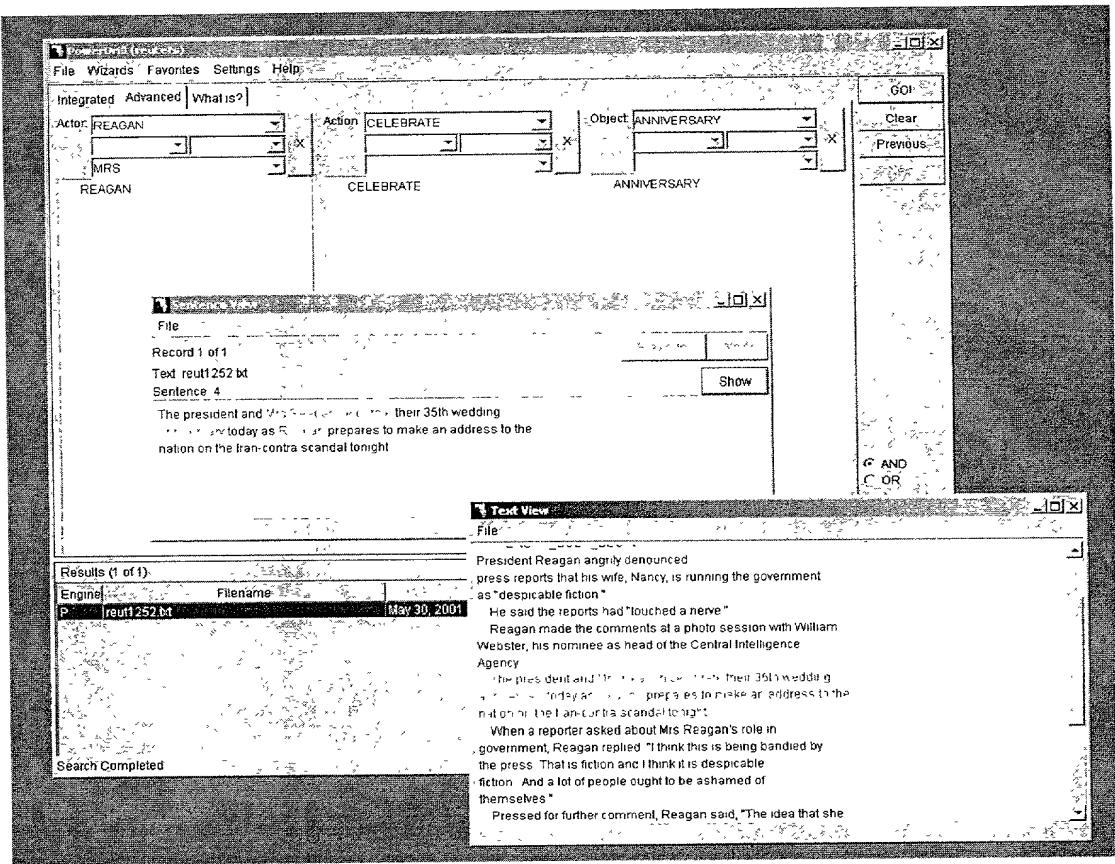
Figure 10
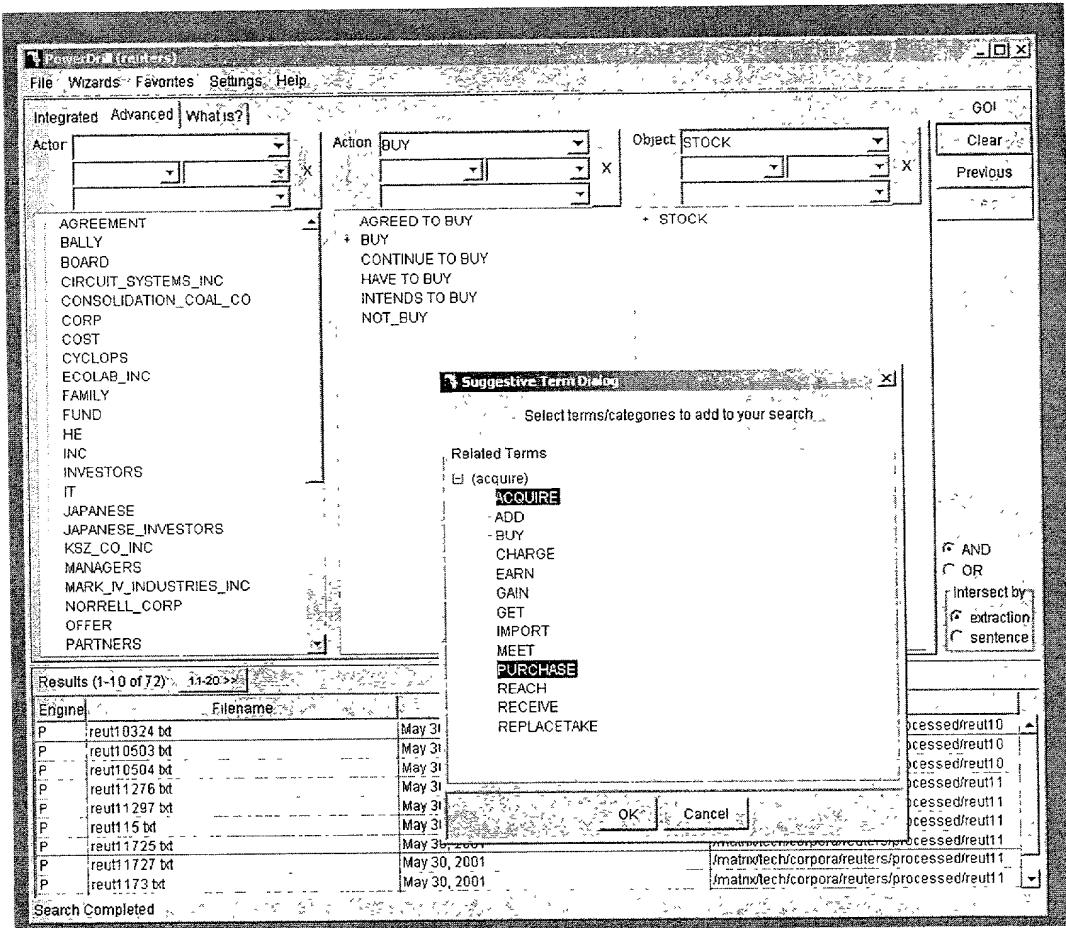
Figure 11

Figure 12

Figure 13